

Abstract

A system including confocal and triangulation-based scanners or subsystems provides data which is both acquired and processed under the control of a control algorithm to obtain information such as dimensional information about microscopic targets which may be "non-cooperative." The "non-cooperative" targets are illuminated with a scanning beam of electromagnetic radiation such as laser light incident from a first direction. A confocal detector of the electromagnetic radiation is placed at a first location for receiving reflected radiation which is substantially optically collinear with the incident beam of electromagnetic radiation. The system includes a spatial filter for attenuating background energy. The triangulation-based subsystem also includes a detector of electromagnetic radiation which is placed at a second location which is non-collinear with respect to the incident beam. This detector has a position sensitive axis. Digital data is derived from signals produced by the detectors. In this way, data from at least one triangulation-based channel is acquired in parallel or sequentially with at least one slice of confocal image data having substantially perfect temporal and spatial registration with the triangulation-based sensor data. This allows for fusion or further processing of the data for use with a predetermined measurement algorithm to thereby obtain information about the targets.